Safety Guide

1. Please do not use petrol as test liquid.
2. Keep no fire and no smoking around when working.
3. Use the special test liquid and cleaning detergent only.
4. Use A.C. 240V, 50 Hz only.
5. Keep this machine in a dry environment under normal temperature.
6. Discharge the used test liquid and cleaning detergent from the let out vent of the machine.

Preface

As the engine always works in different conditions, for example, cold and hot startup, running rapidly, in accelerating and decelerating with different loadings of the car, so the car needs different density of mixed gas. It leads to the increase of oil consumption of oil supply system with incomplete burn and excessive waste gas pollution over the protection standard. Without good maintenance and service, the engine will be unable to accelerate, the fuel injector will be working badly in atomizing, can't startup smoothly, accelerate unsteadily and so on.

□、Technical Parameter

Dimensions: 400mm × 510mm × 450mm
Weight: 25kg
Power: 85-132vac/170-264vac 47-63Hz
Fuel tank capacity: 4.5L
Test tube capacity: 120CC
Ultrasonic wave frequency: 25KHz
Ultrasonic wave power: 100W
Rotate speed: 0-9975r/min, step: 25r/min
Pulse width: 0-30ms, step: 0.1ms
Count: 0-9975r, step: 25r
Time: 0-9975S, step: 5S
System pressure: 0-6.2kg/c ㎡ (variable regulated)
System flow: 4L/min
Test cylinder: 6 (max)

Ⅱ、Specifications & Functions

Fuel Injector tester & Cleaner mainly apply to fuel injector testing, cleaning and quality analyze. The

functions as following:

1、 To test and analyze the injecting state.

2、 To test the injector dribbling.

3、 To test the injecting angle and atomizing.

4、 To test the injecting volume.

5、 To test the injector uniformity.

6、 To test conduct the physical and chemical cleaning of the blocked or trouble injector, ultrasonic cleaning, test cleaning and on-vehicle cleaning.

7、 To test the open and close injecting pressure of the injector.

8、 Can clean the engine without dismantling (choose matched connector).

9、 Can operate the auto static test、dynamic test and selective test with the injecting dribbling、angles、atomization、uniformity of one or more(1-6) injectors, can simulate any state of the vehicle to observe the complete process of injectors.

10、 Can operate automatically、reversely、and ultrasonic cleaning with one or more injectors at different state, such as high resistor、low resistor、electric voltage and electric current.

11、 Can test by count mode and timing mode, also have backlight, can observe the injectors clearly.

12、 If use new type injector, just need choose the matched connector and replace the O-ring.

13、 It adopts to united design of microcomputer skill and intelligent engine, and suppose driving power and specified injecting protection system, ensure to operate the test and clean at any mode such as high resistor、low resistor、electric voltage and electric current.

14、 Have powerful、safe and time ultrasonic cleaning system.

15、 It uses environmental protective and safe test fluid and cleaning detergent, accords with Montreal Agreement, innocuous、with no peculiar smell、non-volatile and can be reclaimed repeatedly and effective, it's innocuous with the operators.

Ⅲ、Appearance

1

2

Item	Components	1	2
1	Fuel pipe	√	
2	Standing nut	√	
3	Standard feed fuel board	√	
4	Connector of injector	√	

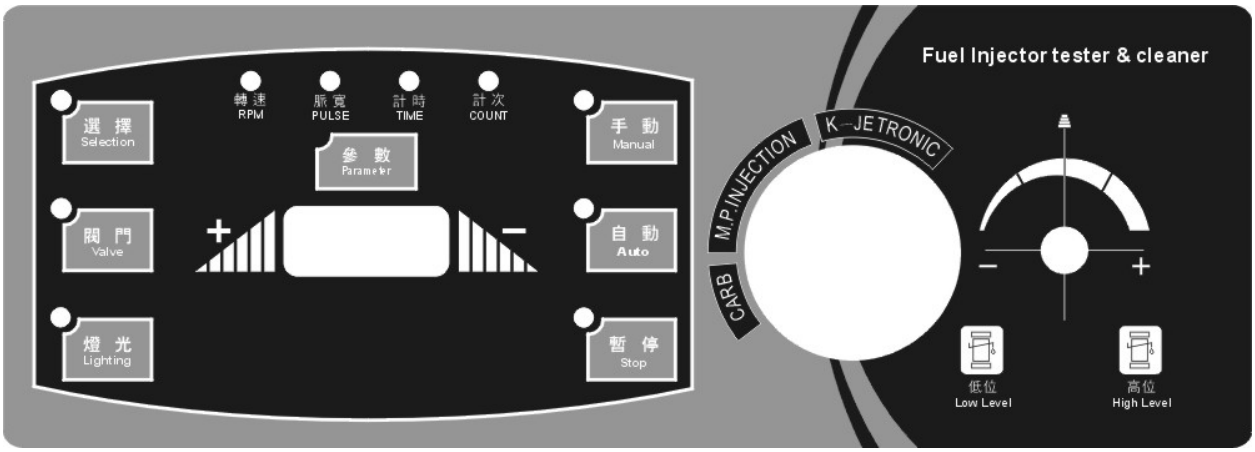
5	Test tube	√	
6	Panel	√	√
7	Injector connect cable	√	
8	Injector	√	
9	Light	√	
10	Power	V	
11	Power switch	√	
12	Pressure gauge	V	
13	Pump power	√	
14	Cleaning tank		√
15	Socket of let-out		√

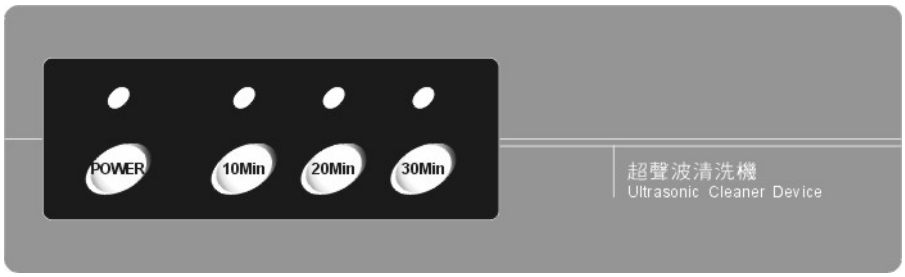
WARNING:

If use the test liquid of other brands, it may corrupt O-ring damage. Please use the test fluid and detergent we supplied.

□、Instruction in using the Fuel Injector tester & Cleaner

1、panel direction





1) Selection

Press the key, start the test mode at idling speed, rotation speed、pulse width、timing、and count signal lamp displays in proper order, numeral tube shows 750、3、160、2000 successively; Press again start the test mode at max loading, signal lamp lights, numeral tube shows 240、12、25、1000 successively. Press it again, start the test mode at max rotational speed, numeral tube shows 3000、6、20、1000. Press again start the test mode at injecting capacity in 15S, numeral tube shows 15S.

2) Valve

Press the key, the signal lamp lights, valve opens, the unit begins to back drain the liquid. The signal

lamp turns off, valve closes. After 10 minutes the program stops automatically.

3) Lighting

Press the key, the signal lamp and the backlight light, press it again, the lamp turns off. With the automatic protect function in 10 min under the stop state.

4) Parameter

Press the key, select and set rotation、pulse width、timing and count. Indicator shows the current parameter state.

5) Auto

Press the key, starting working as the set-up program.

6) Manual

Press the key, operate manually, press selection key firstly to set the test program, press it again, start working.

7) Stop

Press the key, stop during the test, only apply to manual function.

8) "＋,－"

Press the key, increase or decrease the data of rotation、pulse width、timing and count.

2、Test operation

Step 1: Test the impedance

Remove the serviced injectors from vehicle and mark them by sequence. Measure the impedance value of each injector by the digital multimeter, and the impedance difference of each nozzle should not be more than 1 Ω, or replace them.

Step 2: Connect the power

Insert the power in the outlet at the back, connect 220V A.C. power, and switch on the power at the right (the screen shows 2000 finally).

Step 3: Test the minimum liquid level

When starts the machine, the minimum liquid level indicator lights on, now please put in the test liquid from the inlet (open the top cover, at the right of the machine). Normally it needs 1.6L test liquid. If the liquid level excessive, max liquid level indicator lights, please let out the excessive test liquid.

Step 4: Press the "Fuel pump" key (at the front door of the machine)

When the fuel pump works, adjust the knob as the proper pressure needed.+

NOTICE: If the oil in fuel tank is too little, don't open the fuel pump, or may damage it.

NOTICE: The main machine use test fluid, Ultrasonic wave machine use cleaning detergent. Never mix detergent into test liquid, especially not to take detergent as test fluid, otherwise it will cause damage of pump and other components.

3、Selective testing and cleaning

1） Dribbling test

Select the corresponding connectors and fit them on the injectors, them check the breakage and distortion of the O-ring of the injectors (replace it if damaged). Put the injectors on the test stand, and then connect them well.

Press【Fuel Pump】key, to start pump running. Set the pressure to the manufacturer specified value (10% higher is the best) by press【＋】or 【－】to observe the dribbling state. Replace the injector if the dribbles one more drop in 1 minute (or identify it according technical standard).

2) Test the injector angle and atomization states

Press 【Selection】 key to start the cleaning test, and observe injecting angles and atomizing states. Injecting angles should be identical (or identify it according to technical standard), and injecting well distributed without jetting, or replace the injectors.

3) Test injecting volume

Press【Fuel Pump】key to adjust the system pressure, then press【Selection】key to start cleaning and testing, press【Manual】key for 15S, observe the injecting volume should be 38ml-42ml (or test it according to technical standard), or replace the injectors.

4) Test injecting uniformity

Press【Selection】key to start uniformity test, the numeral tube shows 750r/min, pulse width 3ms, timing 120s, count 2000 times. Press【Fuel Pump】key to set the pressure to system pressure of serviced vehicle, press 【Manual】key, observe the injecting volume of each injectors, the uniformity less than 9% in each test tube is good (or test it according to technical standards), replace it if the volume is more than 9%.

4、Automatic testing and cleaning

Before automatic testing and cleaning, press【Fuel Pump】key to start it, and set the system pressure to the value of the serviced vehicle (10% higher is the best), then press【Auto】key to start automatic testing and cleaning, during this program, press 【Selection】key, the system will back to initial state.

1) Test injecting angles, atomization, dribbling and automatic testing and cleaning

Press【Auto】key, keep injecting for 15s, time value decreases to 0, can observe the injecting angles、atomization and volume, replace or clean the injector, if appears gush、unusual angels and unusual volume. Stop injecting for 30s, and observe injecting volume, time value shows 30s, the liquid will back to the fuel tank in the following 30s. Then start dribbling testing for 60s, if no dribbling, the unit will starts regular testing automatically.

2) Test mode at idling speed

Conduct the injecting test as following:

Injecting RMP:	750r/min
Pulse Width:	3ms
Count:	2000
Timing:	160s

When the producer is over, observe the injecting uniformity, and replace or clean it if the value is more than 9%.

3) Test mode at max loading

Conduct the injecting test as following:

Injecting RMP:	2400r/min
Pulse width:	12ms
Count:	1000

This program can observe the injecting volume at the max loading

4) Test mode at high speed

Conduct the injecting test as following:

Injecting RMP:	3000r/min
Pulse Width:	6ms
Count:	1000
Timing:	20s

This program can observe the working state at high speed.

5) Test injecting with complete procedure

During this procedure, Pulse width is 3ms, RMP is 750r/min, then the RMP will up to 9975r/min, Pulse width will up from 3ms to 12ms, then down to 1.1ms. Total cycles is 5 times, and running time is 20s, observe for 30s after the test, then the liquid will return for 30s.

During the automatic test, press【Selection】to pause it as you need.

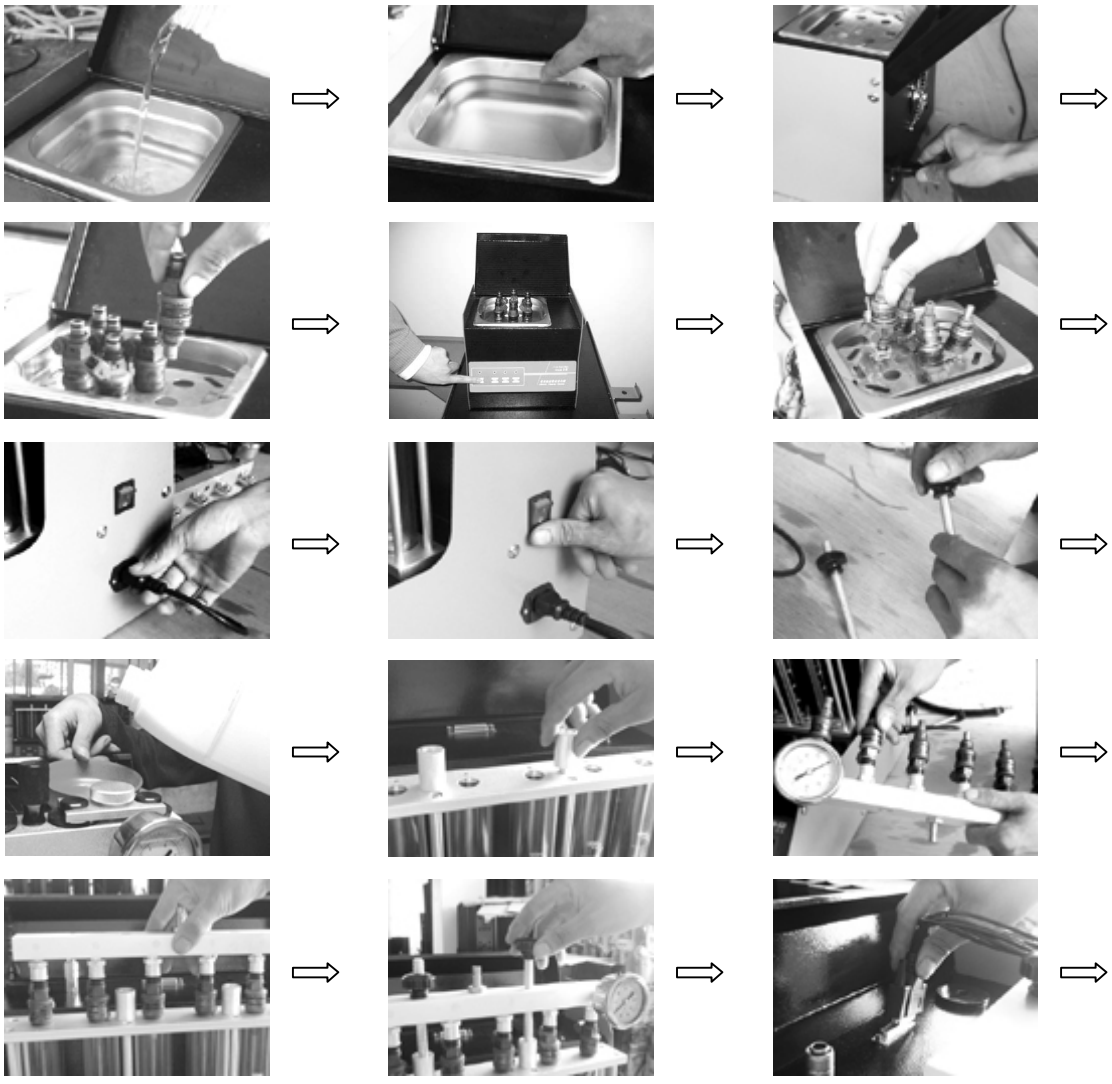
5、Test mode of editing procedure

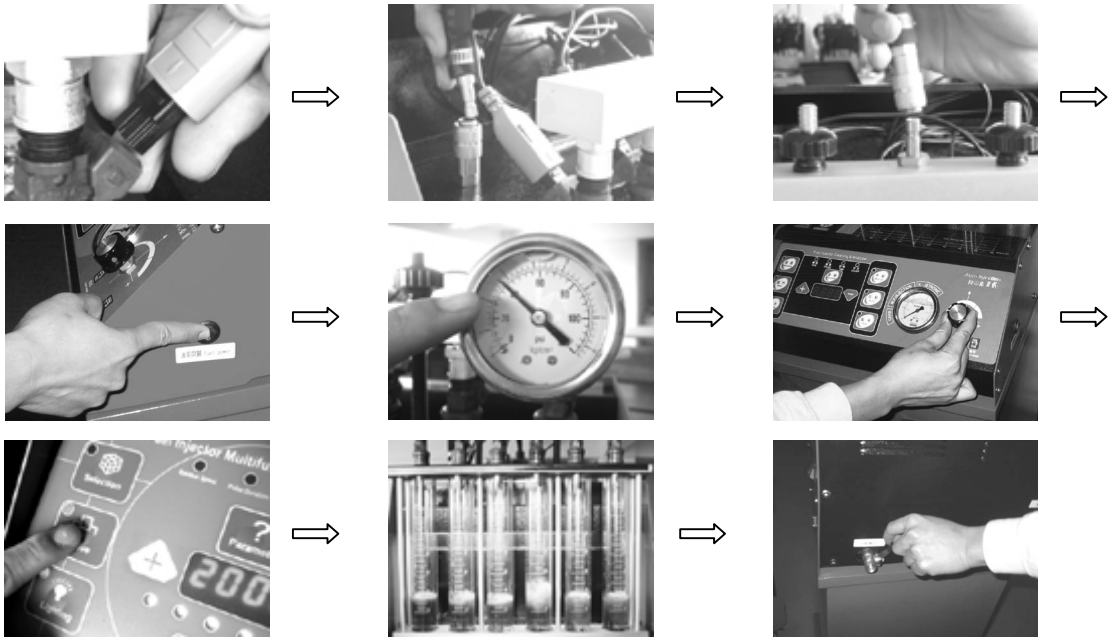
Every time press 【Selection】key, rotation speed、pulse width、count and timing signal lamp displays successively. It indicates in current state when the signal lamp lights. Press 【＋】or 【－】to select suitable rotation、pulse width、timing and count, then press【Manual】.

Ⅴ、Use the Ultrasonic Cleaner

1. Before starting the machine, put in the special cleaning detergent, normally the liquid level is 3/4 of the cleaning groove. (Don't start the machine when the groove empty)
2. Program:
   1). Insert the power;
   2). Press the power key, now starts working (tacitly approve 10 minutes, then stops automaticly). If need 20 or 30 minutes, press the corresponding key, and the indicator lights on.
3. If need change the cleaning detergent,let out the liquid through the switch at the back of the machine.

Ⅵ、Installation





Ⅶ、Install the connecter

1、φ10.6 connecters

Suitable model (Top feed injectors):

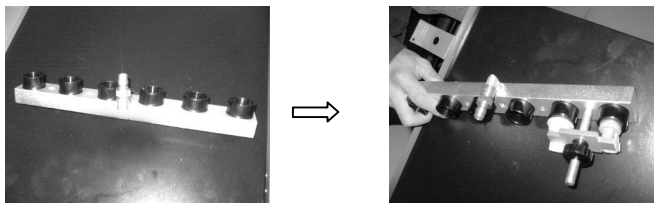
TOYOTA、HONDA、NISSAN、MAZDA、HYUNDAI、FORD、GM、CHEVROLET…

2、φ13.6 connecters

Suitable model(Top feed injectors):

BOSCH、AUDI、VOLKSWAGEN、VOLVO…

3、Side feed connecter



Suitable model:

NISSAN、PREVIA（TOYOTA）、MAZDA 626 / 929、DAEWOO…

Ⅷ、Parameter of Fuel System Pressure

Brand of Car	Model	System Pressure(kg/c ㎡)

Item	Malfunction	Cause	Solve measure
	MAZDA	323	2.0-2.2
		626	2.5-2.9
		929	2.5-2.9
	BMW	528	2.7-2.9
	MERCEDES-BENZ	2.3L	2.04-4.08
		2.6L	2.04-4.08
		3.0L	2.04-4.08
	VOLVO	VOVLE	2.7-2.9
	NISSAN	BLUE BIRD	2.5
		MAXIMA	2.5
		300ZX	2.06-2.55
	FORD	TEMPO 2.3L	2.8
		LINCOIN TOWEN	2.06-3.08
	GM	BUICK SENTURY	2.9-3.3
		BUICK AVENUE	2.9-3.3
		CADILLAC 5.7	2.9-3.3
		CHEVROLET LUMINA	2.9-3.0
		CHEVROLET CORSICA	2.9-3.0
	MITSUBISHI	V6	3.5
	FAW-VOLKSWAGEN	JETTA	2.7-2.9
	SHANGHAI VOLKSWAGEN	SANTANA 2000	2.2-2.65
	DAEWOO	DAEWOO	2.8-3.0
	HYUNDAI	SONATA	2.65-2.75
	TOYOTA	CROWN 3.0	2.84
		PREVIA	2.7-3.3
		LEXUS 300L, S400	2.65-3.04
		CAMRY 3.0	2.65-3.04
		LAND CRUISE	3.0
		CORONA	2.7-3.1
	HONDA	ACCORD 2.0, 2.2	2.85
		CIVIC 1.5L	2.55-2.85
		LEGEND 3.2L	2.7-3.04
	CHRYSLER	CHEROKEE 213	2.73
		DODGE 3.3L	3.73
	AUDI	SIX CYLINDER	2.8-3.0
		FOUR/FIVE CYLINDER	4.5-5.0

Ⅸ、Trouble Sheet

A	Turn on the power switch, the control panel and all the indicators don't light.	A1- The plug of electrical wire is loosen. A2- No Power supply. A3- Fuse is burn out. A4- witch is not work.	-Check the connection of plug. - Check the electric power. - Replace it. - Replace it.
B	System can't return liquid.	B1- Solenoid valve is fault. B2- Main board is fault. B3- No power supply. B4- Test liquid is overfull.	- Replace it. - Replace it. -Check the connection terminal of solenoid valve. - Discharge some of it.
C	Backlight is not work.	C1- The plug of electrical wire is loosen. C2- The light is fault. C3- Main board is fault.	- Check plug and adapters. - Replace it. - Replace it.
D	Test fluid return is slow.	D1- Solenoid is heat. D2- Vent hole of press plank is clogged. D3- Solenoid Valve is clogged. D4- Solenoid valve is fault. D5- Filter is clogged.	- Stop running for 15 min. - Check the O-ring the press plank. - Blow it with compressed air or clean it. - Replace it. - Need to clean.
E	Pressure is too low.	E1- Pump pressure is low.	- Check the pump and filter net. - Check the volt regulating board and switch. - Replace it. - Check oil pipe, loop board, filter.
F	Turn on the power switch, digital tube display 8888.	F1- Main board CPU is fault.	- Replace it.
G	Turn if the power switch, digital tube and indicators display unstably.	G1- Switch is not well connected. G2- Contact piece is not well connected.	- Check the lead of switch. - Check the contact piece of the circuit board.
H	Press the key of control panel, the corresponding indicator display unstably.	H1- Key is fault. H2- Not well connection.	- Replace it. - Check the contact piece.
J	Test liquid in test tube appear milk white.	J1- Test liquid and detergent is mixed.	- Turn off the power, unscrew the bolt under the bottom of cabinet to discharge the test liquid, then circularly clean with test liquid.
J	Leakage of solenoid valve.	K1- Outside leakage. K2- Inside leakage.	- Re-fit the screw and sealing bush. - Replace it.
K	Switch on the cleaning machine, the indicators of control panel doesn't light, the fan doesn't run.	L1- The power plug is loosen. L2- No power supply. L3- Fuse is burn off.	- Check the connection of plug. - Check the voltage. - Replace it.

Fuel Injector tester & Cleaner